9. The method of claim **1**, wherein at least one of coupling the first set of components and coupling the second set of components comprises coupling a transducer.

10. The method of claim **9**, wherein coupling the transducer comprises coupling at least one of a mechanical actuator, a thermal actuator, an optical actuator, an electrical actuator, a chemical actuator, and a fluidic actuator.

11. The method of claim **10**, wherein coupling the transducer comprises coupling at least one of a motor, a piston, a relay, a microphone, a piezoelectric device, a battery, and a fuel cell.

12. The method of claim **1**, wherein at least one of coupling the first set of components and coupling the second set of components comprises coupling a passive component.

13. The method of claim **12**, wherein coupling passive components comprises coupling at least one of a resistor, an inductor, and a capacitor.

14. The method of claim **1**, further comprising fabricating a passive component within at least one of the first encapsulating layer and the second encapsulating layer.

15. The method of claim **1**, further comprising routing optical signals within the device.

16. The method of claim **1**, further comprising forming an optical waveguide within the device.

17. The method of claim **1**, further comprising guiding optical signals through the device by disposing at least one of optical filters, optical absorbers, optical reflectors, optical scatterers, optical splitters, and optical diffracters in accordance with one or more predetermined optical signal paths.

18. The method of claim **1**, further comprising incorporating nanoparticles within at least one of the first encapsulating layer and the second encapsulating layer to alter properties of a portion of the device.

19. The method of claim **18**, wherein incorporating nanoparticles comprises incorporating nanoparticles to alter at least one of the electrical conductivity, the thermal conductivity, and the mechanical properties of the portion of the device.

20. The method of claim **1**, further comprising incorporating nanoporous structures within at least one of the first encapsulating layer and the second encapsulating layer to alter properties of a portion of the device.

21. The method of claim **20**, wherein incorporating nanoporous structures comprises incorporating nanoporous structures to alter at least one of the electrical conductivity, the thermal conductivity, and the mechanical properties of the portion of the device.

22. The method of claim **1**, wherein at least one of disposing the first encapsulating layer and disposing the second encapsulating layer comprises disposing a dielectric polymer material.

23. The method of claim **1**, wherein at least one of disposing the first encapsulating layer and disposing the second encapsulating layer comprises disposing a thermoplastic material.

24. The method of claim **1**, wherein at least one of disposing the first encapsulating layer and disposing the second encapsulating layer comprises disposing a thermoset material.

25. The method of claim **1**, wherein at least one of disposing the first encapsulating layer and disposing the second encapsulating layer comprises disposing at least one of polymethyl methacrylate, polyimide, and benzocyclobutenes.

26. The method of claim **1**, further comprising removing at least a portion of at least one of the first encapsulating layer and the second encapsulating layer.

27. The method of claim **1**, wherein at least one of disposing the first encapsulating layer and disposing the second encapsulating layer comprises disposing SU-8.

28. The method of claim **1**, wherein at least one of disposing the first encapsulating layer and disposing the second encapsulating layer comprises disposing a material in a liquid phase.

29. The method of claim **1**, wherein at least one of disposing the first encapsulating layer and disposing the second encapsulating layer comprises disposing a material in a vapor phase.

30. The method of claim **1**, wherein coupling the second set of components comprises coupling the second set of components directly on the first encapsulating layer.

31. The method of claim **1**, further comprising:

depositing a metallic interconnection layer on the first encapsulating layer, and

coupling the second set of components directly on the metallic interconnection layer.

32. The method of claim **1**, further comprising:

depositing a metallic interconnection layer on the first encapsulation layer,

depositing a dielectric layer over the metallic interconnection layer, and

coupling the second set of components directly on the dielectric layer.

33. The method of claim **1**, wherein functionally interconnecting at least one of the first set of components with at least one of the second set of components comprises electrically interconnecting at least one of the first set of components with at least one of the second set of components.

34. The method of claim **33**, wherein electrically interconnecting at least one of the first set of components with at least one of the second set of components comprises:

disposing a via within the first encapsulating layer from an upper surface of the first encapsulating layer to an upper surface of the at least one of the first set of components, and

metallizing the via.

35. The method of claim **1**, further comprising disposing a microfluidic channel within at least one of the first encapsulating layer and the second encapsulating layer.

36. The method of claim **35**, further comprising:

allowing the microfluidic channel to be filled with a thermally conductive material, and

drawing, by the thermally conductive material, heat away from at least one component of the first set of components and the second set of components.

37. The method of claim **35**, further comprising coupling the microfluidic channel in fluid communication with a sensor and an external fluid sample, and allowing the fluid sample to flow through the microfluidic channel to the sensor.

38. A device, comprising:

a substrate,

a first set of components coupled to the substrate,

a first encapsulating layer encapsulating the first set of components,

a second set of components coupled to the first set of components, wherein the second set of components are predefined,